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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,788	12/21/2001	Charles P. Norman	ST00028USU	5430

7590

09/15/2005

THE ECLIPSE GROUP  
10453 RAINTREE LANE  
NORTHRIDGE, CA 91326

EXAMINER

TRAN, KHANH C

ART UNIT PAPER NUMBER

2631

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/036,788	<b>Applicant(s)</b> NORMAN ET AL.	
	<b>Examiner</b> Khanh Tran	<b>Art Unit</b> 2631	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 July 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-8 is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/21/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The Amendment filed on 07/06/2005 has been entered. Claims 1-8 are pending in this Office action.

### ***Response to Arguments***

2. The rejection of claim 8 under 35 U.S.C 112, second paragraph, as being indefinite, has been withdrawn after Applicants amend claim to clarify the indefinite.

3. Applicant's arguments, see pages 4-6 of the Remarks, filed on 07/06/2005, with respect to the rejection(s) of claim(s) 1-4 under 35 U.S.C 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the cited reference, Sturza et al. et al. U.S 4,862,178.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturza et al. et al. U.S 4,862,178.

Regarding claim 1, Regarding claim 1, Sturza et al. invention is directed to a digital system for use in determining the signal phase of satellite transmissions that does not require a priori knowledge of the coding modulation of the satellite transmissions.

Figure 1 illustrates a navigation system including an L2 codeless card. Figure 2 is a block diagram of the L2 codeless card 14. In column 3 line 53 to column 4 line 30,

L2 signals are applied to an image reject filter 20. The output of the image reject filter 20 is translated to the nominal intermediate frequency (IF) value of 37.2 MHz by application of a mixer 22. The foregoing corresponds to the claimed step "*down-converting the incoming signal to an IF signal*".

The IF signal is then applied to a 20 MHz bandpass filter 24, to a notch filter 26 to a limiter 28. The resulting signal is then applied to the STOP terminal of a divide-by-32 counter 30, which provides a phase sampling function. The counter is clocked by the 1190.4 MHz local oscillator signal. As recited above, because the nominal intermediate frequency (IF) value is 37.2 MHz, the counter is running at higher frequency than that of the IF signal.

The five-bit state of the counter is stopped by the arrival of positive zero crossing of the hard limited IF signal; see column 4, lines 55-69. In column 5, lines 15-25, the state of the counter is applied to a latch 38 at the end of each phase sampling period, terminated by the arrival of positive-going zero crossing of the hard-limited IF STOP signal at the counter 30.

Sturza et al. does not expressly teach the claimed step of outputting a state of magnitude of the IF signal when the IF signal has zero crossing.

In column 4 line 55 via column 5 line 25, the state of the counter 30, when stopped by the arrival of positive zero crossing of the hard limited IF signal, is represented by equation (2); see column 4. The five-bit state of the counter 30 includes the effect of the P-coding of the GPS signal. Sturza et al. further teaches that as a result of the doubling the count of the counter 30, the value of the IF signal  $s(t)$  is squared and an expression or value that is independent of the coding of  $s(t)$  is obtained. Because Sturza et al. teaches the state of the counter 30, when stopped by the arrival of positive zero crossing of the hard limited IF signal, one of ordinary skill in the art at the time of the invention would have been motivated to modify Sturza et al. teachings to output the state of the magnitude of the IF signal at the arrival of positive zero crossing of the hard limited IF signal. The five-bit state of the counter 30 is directly related to the state of the magnitude of the IF signal. Sturza et al. further teaches that the effect of the P-coding of the GPS signal is removed by doubling the count of the counter 30, which has been stopped by the arrival of positive-going zero crossing the hardlimited IF signal. As a result of such doubling the counter of the counter 30, the magnitude of the IF signal can be determined independent of the coding of the  $s(t)$ .

As recited above, a measured phase value is entered into a latch 28 at the end of each phase sampling period, terminated by the arrival of a positive-going zero crossing of the hardlimited IF STOP signal at the counter 30. The

Art Unit: 2631

latched measured IF phase value is applied to the phase processor gate array

36. The latched measured IF phase value corresponds to the claimed the extracted phase of the IF signal.

Regarding claim 2, as disclosed in column 3, lines 30-40, figure 1 illustrates a navigation system including a GPS receiver 10.

Regarding claim 3, in column 5, lines 30-65, figure 3 illustrates a phase processor gate array 36 including eight independent channels 42 44 46 48 50 52 54 and 56, wherein each channel of the array 36 processes the measured phase value to track the L2 signal phase of a predetermined satellite transmitter. The channels 42 through 56 are arranged to provide values of measured phase difference with an estimated phase value associated with the signals transmitted from predetermined satellite transmitters. In view of that, the act of providing values of measured phase difference with an estimated phase value corresponds to the claimed step of extracting the phase performed by subtracting an estimated phase from the extracted phase of the IF signal.

Regarding claim 4, in column 4, lines 55-65, the measured phase sampling interval is an integer multiple of  $T=2\pi/\Omega_{IF}$ .

***Allowable Subject Matter***

Art Unit: 2631

3. Claims 5-7 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 5, claim is allowable over prior art of record because the cited references cannot teach or suggest the claimed limitations "the extracted phase of the IF signal is given by  $-2 \pi J / M$  radians, where  $M$  is the integer multiple of the IF, and  $J$  is the outputted state of the counter".

4. Claim 8 is allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 5, claim is allowable over prior art of record because the cited references cannot teach or suggest the claimed limitations "holding a magnitude bit that is set to 1 if an absolute value of the IF signal exceeded a threshold prior to an occurrence of a previous zero crossing".

### **Conclusion**

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

Art Unit: 2631

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

Khánh công Tran

09/14/2005

Examiner KHANH TRAN